

AMENDMENTS TO THE CLAIMS

This listing of claims will replace all prior versions and listings of claims in the application:

Listing of claims:

1. (currently amended) Filler for plastics formulations based on polyurethane, ~~obtainable~~ obtained by reaction of the following components (A) to (E):

- (A) 15 to 35 wt.% of one or more radiation-curing (meth)acrylate-based compounds with OH numbers of 40 to 700 mg KOH/g
- (B) 15 to 40 wt.% of one or more polyols with a molecular weight of 500 to 6,000 g/mol
- (C) 0 to 15 wt.% of one or more polyols with a molecular weight of less than 500g/mol
- (D) 1 to 10 wt.% of at least one compound which is mono- and/or difunctional in the sense of the isocyanate reaction, which additionally contains anionic groups or functional groups which can be converted into anionic groups
- (E) 24 to 69 wt.% of one or more polyisocyanates,

and subsequent ~~chain-lengthening or~~ crosslinking of the resulting product from (A) to (E) with component (F)

(F) 0.5 to 10 wt.% relative to the total weight of components (A) to (E), of a mixture of at least one diamine with a polyamine of functionality greater than 2,

at least 30 wt.%, ~~preferably 50 wt.%~~ of component (F) comprising polyamine of functionality greater than 2.

2. (original) Filler according to claim 1, wherein components (A) to (F) are defined as follows:

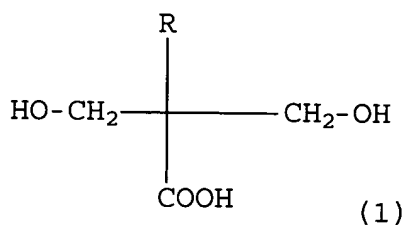
(A) one or more of the following compounds: polyester-(meth)acrylate prepolymer containing hydroxyl groups, polyepoxy(meth)acrylate prepolymer containing hydroxyl groups, polyurethane-(meth)acrylate prepolymer containing hydroxyl groups and (meth)acrylate ester containing hydroxyl groups,

(B) one or more of the following compounds: polyester-, polyester-amide-, polyether-, polythioether-, polycarbonate-, polyacetal-, polyolefin-, polysiloxane- and poly(meth)acrylate-polyols,

(C) one or more of the following compounds: ethylene glycol, propylene glycol, 1,4-butanediol, 1,6-hexanediol,

diethylene glycol, triethylene glycol, neopentylglycol, 1,4-bis(hydroxymethyl)-cyclohexane, dipropylene glycol, glycerol, trimethylolpropane or pentaerythritol,

- (D) one or more of the following compounds: malic acid, glycolic acid, glycine, taurine, aminocaproic acid, 2-amino-ethylaminosulphonic acid, 2,2-bis(hydroxymethyl)-alkanemonocarboxylic acids with a total of 5 to 8 carbon atoms according to the general formula (1):



in which R represents a linear, branched or cyclic alkyl radical with 1 to 7 C atoms,

- (E) one or more of the following compounds: 1,6-hexamethylene diisocyanate, tetramethylene diisocyanate, isophorone diisocyanate, 4,4'-dicyclohexylmethane diisocyanate, 1,4-phenylene diisocyanate, 2,6- and 2,4-toluene diisocyanate, 1,5-naphthylene diisocyanate, 2,4'- and 4,4'-diphenylmethane diisocyanate, polyisocyanates of higher functionality or modified isocyanates, such as polyisocyanates containing carbodiimide groups, allophanate groups, isocyanurate groups and/or biuret groups,

(F) one or more of the following compounds: 1,2-diaminoethane, 1,6-diaminohexane, piperazine, 2,5-dimethylpiperazine, 1-amino-3-aminoethyl-3,5,5-trimethylcyclohexane, 4,4'-diaminodicyclohexylmethane, 1,4-diaminocyclohexane, 1,2-propylenediamine, hydrazine, amino acid hydrazides, bishydrazides, bis-semicarbazides and polyamines with a functionality greater than 2.

3. (currently amended) Filler according to ~~claims~~ claim 1 or 2, wherein components (A) to (F) are defined as follows:

(A) one or more of the following compounds: 2,2-bis-4-(3-methacryloxy-2-hydroxypropyl)phenylpropane, 2,2-bis-4-(3-acryloxy-2-hydroxypropyl) phenylpropane, glycerol monoacrylate, glycerol monomethacrylate, trimethylolpropane monoacrylate, trimethylolpropane monomethacrylate, pentaerythritol diacrylate, pentaerythritol dimethacrylate,

(B) one or more of the following compounds: polyester- and polycarbonate-diols,

(C) one or more of the following compounds: neopentylglycol, trimethylolpropane, 1,6-hexanediol,

(D) 2,2-dimethylolpropionic acid,

(E) isophorone diisocyanate and/or 4,4'-dicyclohexylmethane diisocyanate,

(F) as diamine: 1,2-diamionethane; as polyamine with a functionality greater than 2: diethylenetriamine.

4. (currently amended) ~~Use of the filler according to one of claims 1 to 3 for the preparation of dental compositions~~ A dental filling composition comprising the filler as disclosed in claim 1 or 2.

5. (currently amended) ~~Use of the fillers according to one of claims 1 to 3~~ A material for the preparation of dental filling materials, dental cementing cements, temporary crown and bridge materials, veneer plastics, prosthesis materials, orthodontic materials, plastics for sealing fissures, modelling modeling plastics or and model plastics wherein said material is comprised of the filler as disclosed in claim 1 or 2.

6. (currently amended) ~~Use of the fillers according to one of claims 1 to 3 for~~ A formulation for coating, gluing or embedding substrates comprising the filler as disclosed in claim 1 or 2.

7. (currently amended) Process for the preparation of fillers for plastics formulations based on polyurethane, comprising the following steps of:

(1) reaction of a mixture of:

(A) 15 to 35 wt.% of one or more radiation-curing (meth)acrylate-based compounds with OH numbers of 40 to 700 mg KOH/g

(B) 15 to 40 wt.% of one or more polyols with a molecular weight of 500 to 6,000 g/mol

(C) 0 to 15 wt.% of one or more polyols with a molecular weight of less than 500g/mol

(D) 1 to 10 wt.% of at least one compound which is mono- and/or difunctional in the sense of the isocyanate reaction, which additionally contains anionic groups or functional groups which can be converted into anionic groups

(E) 24 to 69 wt.% of one or more polyisocyanates,

(2) neutralization of the potential ionic groups present in the prepolymers;

(3) dispersing in water and ~~chain-lengthening or~~ crosslinking with:

(F) 0.5 to 10 wt.%, relative to the total composition of components (A) to (E), of a mixture of at least one diamine with a polyamine of functionality greater than 2;

at least 30 wt.% of component (F) comprising polyamine of functionality greater than 2;

(4) working up.

8. (**currently amended**) ~~Fillers according to claims 1 to 3 containing compositions~~ A composition comprising the filler according to claim 1 or 2 present in an amount of from 1 to 40 wt. % and further comprising:

~~(C1) 1 to 40 wt.% of filler according to at least one of claims 1 to 3,~~

~~(C2)~~ (C1) 10 to 98.8 wt. % of one or more ethylenically unsaturated polymerizable monomers based on di- or polyfunctional (meth)acrylates,

~~(C3)~~ (C2) 0 to 75 wt. % of conventional fillers,

~~(C4)~~ (C3) 0.1 to 3 wt. % of initiators and, ~~where appropriate,~~ activators,

~~(C5)~~ (C4) 0 to 10 wt. % of additives, ~~where appropriate~~ pigments, ~~thixotrophy auxiliaries, and plasticizers~~ and

optionally containing one or more members selected from the group consisting of activators pigments, thixotrophy auxiliaries, and plasticizers.

9. (new) The filler according to claim 1, wherein at least 50 wt. % of component (F) is a polyamine having a functionality greater than 2.

10. (new) A method of manufacturing a member selected from the group consisting of filling materials, cements, temporary crown and bridge materials, veneer plastics, prosthesis materials, orthodontic materials, plastics for sealing fissures, modeling plastics and model plastics wherein said method comprises the steps of reacting the components (A) to (E) and subsequently crosslinking the resulting product from (A) to (E) with component (F) according to claim 3.

11. (new) A composition comprising the filler according to claim 3 present in an amount of from 1 to 40 wt. % and further comprising:

(C1) 10 to 98.8 wt. % of one or more ethylenically unsaturated polymerizable monomers based on di- or polyfunctional (meth)acrylates,



(C2) 0 to 75 wt. % of conventional fillers,

(C3) 0.1 to 3 wt. % of initiators,

(C4) 0 to 10 wt. % of additives,

and optionally containing one or more members selected from the group consisting of activators pigments, thixotrophy auxiliaries, and plasticizers.

12. (new) An article of manufacture comprising the filler according to claim 1 or 2 in cured form.

13. (new) An article of manufacture comprising the filler according to claim 3 in cured form.

14. (new) The article of manufacture according to claim 12 wherein the article of manufacture is selected from the group consisting of a filling, cement, temporary crown, a temporary bridge material, veneer plastic, prosthesis, orthodontic appliance, plastic seal and a plastic model.

15. (new) The article of manufacture according to claim 13 wherein the article of manufacture is selected from the group consisting of a filling, cement, temporary crown, a temporary bridge material, veneer plastic, prosthesis, orthodontic appliance, plastic seal and a plastic model.